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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,946

04/25/2006

Shozo Oshio

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EXAMINER

KOSLOW, CAROL M

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,946	<b>Applicant(s)</b> OSHIO, SHOZO	
	<b>Examiner</b> C. Melissa Koslow	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-9, 11, 13 and 19-29 is/are rejected.
- 7) ☒ Claim(s) 6, 10, 12, 14, 15 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/25/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

The non-English references cited in the Foreign Patent Documents section of the PTO-1449 have been considered with respect to the explanations of these references given in the information disclosure statement. The non-English articles have been considered with respect to the supplied English abstracts.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: The subject matter of claims 10, 11 and 26 are not found in the specification.

Claims 8 and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form.

These claims do not further limit the claims they depend upon, which are claims 1 and 3 respectively. This is because claims 1 and 3 teach reacting the alkaline earth compound, silicon compound and carbon in the nitriding gas by heating.

Claim 20 is objected to because of the following informalities: In this claims, the phrase “any one of” should be deleted. Appropriate correction is required.

Claims 5, 19, 21, 23, 25-27 and 29 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification teaches away from using an alkaline earth metal, a rare earth metal, an alkaline earth nitride and a rare earth nitride in the taught process of reacting, by heating in a nitriding atmosphere, an alkaline earth or rare earth source, a silicon source and carbon.

Therefore the claimed process is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The wording of these claims is confusing. It is suggested to rewrite these claims so that the process is clear.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7-9, 11, 20, 22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,851,205.

This reference teaches producing an alkaline earth or rare earth nitridosilicate-based compound by heating a rare earth or alkaline compound capable of forming an oxide thereof, such as oxides, oxalates and carbonates; silica and solid state carbon in a nitrogen atmosphere. The formula in column 3 teaches the amount of oxygen is 0.5 per mole and the amount of rare earth

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is 0.75 per mole. Thus the number of oxygen atoms is smaller than the number of rare earth atoms multiplied by 1.5. the reference teaches the claimed methods.

Claims 3, 4, 1120, 22 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent 5,292,489.

The reference teaches forming  $\text{LnSi}_3\text{N}_5$ , where Ln is a rare earth metal, by reacting, by heating, a mixture of silica, solid state carbon and an oxide of the rare earth metal in nitrogen. The compound is essentially free of oxygen atoms, except for impurity amounts, and thus the taught compound meets the requirements of claim 11. The reference teaches the claimed process.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 4,851,205 in combination with U.S. patent 7,144,524.

U.S. patent 7,144,524 teaches a phosphor based on  $\alpha$ -Sialon, which falls within the general formula of the compound of U.S. patent 4,851,205. Thus one of ordinary skill in the art would have found it obvious to form the phosphor of U.S. patent 7,144,524 using the process of U.S. patent 4,851,205. The references suggest the claimed method.

Claims 16 and 17 are allowable over the cited art of record.

Claims 6, 10, 12, 14, 15 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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There is no teaching or suggestion in the cited art of record of the claimed phosphor  $\text{Ba}_{1-x}\text{M}_x\text{SiN}_2:\text{Eu}^{2+}$ , where M is at least one of Mg, Ca and Sr and  $x > 0.5$ . There is no teaching or suggestion in the cited art of record of producing the compounds of claims 10, 12 and 14 by the method of claim 1 or by producing a phosphor by the process of claim 15. There is no teaching or suggestion in the cited art of record of the process of claims 6 and 18. There is no suggestion or teaching in the art to replace the taught silica with silicon nitride or silicon diimide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/  
May 13, 2008

/C. Melissa Koslow/  
Primary Examiner  
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